## REMARKS

In the present Amendment, Claims 1 and 8-11 and 13 have been amended to recite that the functional groups are not present within the pores. This amendment is supported by the specification, for example, in Paragraph No. [0074].

Claims 1, 6, 8-11 and 13 have been amended to clarify that the functional groups at the entrances of the pores may form a bond between two or more of the functional groups.

Claims 14 and 15 have been added. Claims 14 and 15 are supported by the specification, for example, in Paragraph Nos. [0011], [0017] and [0048].

No new matter has been added and entry of the Amendment is respectfully requested. Upon entry of the Amendment, Claims 1-15 will be all the claims pending in the application.

### I. Restriction Requirement

Applicants affirm the election of Group I, Claims 1-7 and 10.

Further, Applicants respectfully request that process Claims 8-9 and 11-13 be rejoined after product Claims 1-7, 10 and 14-15 are found allowable, pursuant to MPEP 821.04.

### II. Response to Provisional Double Patenting Rejections

In Paragraph No. 7 of the Office Action, Claims 1-5 have been provisionally rejected under the judicially created doctrine of double patenting as allegedly being unpatentable over Claims 1, 2 and 5 of co-pending U.S. Application No. 10/421,697 ("the '697 application"). Further, in Paragraph No. 8 of the Office Action, Claims 6, 7 and 10 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly

being unpatentable over Claims 1, 3 and 5 of the '697 application in view of WO 99/36357 ("WO '357").

In response, Applicants submit herewith a Terminal Disclaimer. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the provisional rejections.

## III. Response to Rejections Under 35 U.S.C. § 102

**1.** In Paragraph No. 10 of the Office Action, Claims 1 and 3-6 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Fowler et al, "Covalent coupling of an organic chromophone into functionalized MCM-41 mesophases by template-directed co-consideration" ("the Fowler article").

Applicants respectfully submit that the present claims are novel over the Fowler article for at least the following reasons.

The Fowler article discloses a mesoporous silica having a channel-like hexagonally ordered structure and containing covalently-linked chemically active groups such as alkyl, aryl, allyl, thiol, amino, epoxy, imidazole or chromophore moieties (page 1825, left column, 3rd paragraph; right column, 1st column).

The Fowler article also describes that the chromophore was present as an additive within the surfactant micelles and that the dye-functionalized material produced therefrom has a reduced porosity due to pendent chromophore moieties that extend into the channel spaces (paragraph bridging pages 1825 and 1826). For this reason, the mesoporous silica of the Fowler article contains covalently-linked chemically active groups not only at the entrances but also in the interior surface of the pores (i.e., channels).

In contrast, in the present invention, only the entrances of the pores contain functional groups. This is evident from the description of the specification of the present application. For example, in Paragraph No. [0074], it is described that a dimerizable organic functional group is introduced to the mesoporous silica while the surfactant is still in the pores thereof and thus never enters into the pores.

To more clearly distinguish the present invention from the Fowler article, Applicants have amended the present claims to explicitly recite that the functional groups are not present within the pores.

Present Claims 6 and 10 further recite that the mesoporous inorganic material comprises a functional substance filled in the pores and that the entrances of the pores are closed by means of the formation of the bond between the functional groups. It is clear that the functional substance used in the present application represents a compound and not a group which is a partial structure of a compound. Accordingly, the covalently-linked chemically active groups in the mesoporous silica of the Fowler article do not qualify as a functional substance within the meaning of the present invention. Furthermore, the Fowler article does not disclose or suggest that a functional substance is filled in the pores of the mesoporous silica containing a covalently-linked chemically active groups and/or that the entrances of the pores are closed. Accordingly, Applicants respectfully traverse the rejection of Claims 6 and 10 on this ground additionally.

In view of the foregoing reasons, Applicants respectfully submit that the present claims are not anticipated by the Fowler article and that the rejection should be withdrawn.

**2.** In Paragraph No. 11 of the Office Action, Claims 1-6 and 10 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Asefa et al, "Periodic mesoporous organosilicas with organic groups inside the channel walls" ("The Asefa article").

Applicants respectfully submit that the present claims are novel over the Asefa article for at least the following reasons.

The Asefa article discloses a periodic mesoporous organosilica containing bridge-bonded ethane groups directly integrated into the silica framework (page 867, right column).

The Asefa article further discloses that the ethene groups of the mesoporous ethenesilica are readily accessible for chemical reactions (page 867, right column). That is, the ethene groups of the mesoporous ethenesilica of the Asefa article may react with an *external* chemical substance, e.g., bromine (page 870, right column).

However, the Asefa article does not explicitly disclose or suggest that an ethene group of the mesoporous ethenesilica may form a bond with another ethene group based on a chemical reaction in response to an external stimulus.

To more clearly distinguish the present invention from the Asefa article, Applicants have amended the present claims to explicitly recite that the functional group is not present within the pores.

Present Claims 6 and 10 further recite that the mesoporous inorganic material comprises a functional substance filled in the pores and the entrances of the pores are closed by means of the formation of the bond in the functional group. It is clear that the functional substance used in the present application represents a compound, but not a group, i.e., a partial structure of a

compound. Accordingly, the ethene groups in the mesoporous ethenesilica of the Asefa article do not qualify as a functional substance within the meaning of the present invention. Furthermore, the Asefa article does not disclose or suggest that a functional substance is filled in the pores (i.e., channels) of the mesoporous ethenesilica. Accordingly, Applicants respectfully traverse the rejection of present Claims 6 and 10 on this ground additionally.

In view of the foregoing reasons, Applicants respectfully submit that the present claims are not anticipated by the Asefa article and that the rejection should be withdrawn.

## IV. Response to Rejection Under 35 U.S.C. § 103

In Paragraph No. 13 of the Office Action, Claims 6, 7 and 10 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Fowler or Asefa article, and further in view of WO '357.

Applicants respectfully submit that the present claims are patentable over the Fowler or Asefa article, and further in view of WO '357 for at least the following reasons.

As set forth above, the mesoporous silica of the Fowler article contains covalently-linked chemically active groups not only at the entrances but also in the interior surface of the pores. Similarly, the periodic mesoporous organisilica of the Asefa article contains bridge-bonded ethane groups directly integrated into the silica framework. Neither the Fowler article nor the Asefa article teaches or suggests functionalizing only the entrances of their mesoporous materials.

Applicants respectfully submit that WO '357 does not rectify the deficiencies of the Fowler article or the Asefa article.

Therefore, even if there might be motivation to combine the cited references, the combination still would not result in the present invention wherein the functional groups are present at the entrances of and not within the pores.

In view of the foregoing reasons, Applicants respectfully submit that the present claims are not obvious over the Fowler or Asefa article, and further in view of WO '357 and that the rejection should be withdrawn.

## IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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